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The Negative Effects of Technology for Students and Educators

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The Negative Effects of Technology for Students and Educators

The Negative Effects of Technology for Students and Educators

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Abstract

This literature review analyzes over 30 peer reviewed, scholarly articles to find a correlation between technology use and the negative impacts it can have on students and educators. This review was able to determine that the overuse of technology can lead to negative health effects as well as impair student learning. With the rapid development of new technologies, educators are having a challenging time keeping up. Without the proper training and support, educators are unable to incorporate technology tools and resources into their lessons effectively. Technologies are being used on a daily basis within the school systems, which has drastically increased student screen time. This literature review found that students who are exposed to a large amount of screen time have a higher risk of experiencing adverse health effects as well as learning deficits. The pressure for educators to incorporate technology into majority of their lessons is increasing student screen time at an alarming rate. This information proves that there is clear need for policy to minimize screen time and the hazardous health consequences associated with screen time among children and youth. The studies analyzed have helped raise awareness to the downfalls of technology use in the classroom and provide suggestions on how to better incorporate technology into student lessons and personal life.

Keywords: technology, screen time, mental health, physical health, learning, 1:1

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Introduction

Technology is becoming more and more prevalent in today's education system. Many schools are allocating funds in order to implement the "one-to-one" initiative. One-to-one initiatives in education (often abbreviated as 1:1) refer to the practice in which educational institutions, issue each of their registered students a computing device, such as a laptop or tablet, in order for the students to access the Internet, digital course materials, and digital textbooks students to be "1 to 1" with a technology device (Vu, Fredrickson, & Gaskill, 2019). Since technology is being utilized within the classroom on a daily basis, it is important that schools are keeping up with the everchanging technological advances. According to a recent survey that was given to New York students, ranging from age 12 to 15, every student surveyed had some form of screened device, and 97% of them also had a cell phone (DiMartino & Schultz, 2020). With this information, it is clear that the direction of education and society is changing rapidly.

During the 2019-2020 school year, the world got a taste of just how quickly the education system is shifting to more technology based, virtual schooling experiences. The pandemic forced school districts, educators, students, and parents to become tech-savvy at an accelerated rate, in order to continue learning from home. Educators were quickly bombarded with new technology tools, activities, programs, and devices that they needed to implement into their now "virtual classrooms". Throughout the pandemic, teachers were definitely feeling a sense of overwhelm. Not only was there stress by the number of technology programs, educators were experiencing physical pain via headaches and eye burn from the excess amount of screen time that was forced upon them.

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Technology can be a transformational learning tool for students if it is implemented into the classroom correctly. It can also become a teacher's worst nightmare and have a negative impact on student learning. There are many articles claiming that the implementation of technology programs and tools is the best way to engage students with the curriculum, but not many articles discuss the adverse effects of technology can have if it is not implemented correctly. The amount of screen time that students are subject to on a daily basis has almost tripled in the past 4 years! (Saunders & Vallance, 2017). Too much exposure to blue light radiation has been proven to have adverse health effects on growing children. According to Saunders and Vallance (2017), roughly half of children and youth exceeding the public health screen time recommendation of 2 hours per day or less. Evidence suggests that screen time is deleteriously associated with numerous health indicators in child and youth populations, including obesity, aerobic fitness, quality of life, self-esteem, pro-social behavior, academic achievement, depression and anxiety (2017). As educators are being pushed to use more technology, they are in turn creating more and more screen time for their students.

Administrators, educators, students and parents need to be aware of the potential negative impacts that technology can have on student mental health, physical health and learning. Educators often experience many challenges and stress, as they attempt to learn and prepare technologically advanced lessons with little to no professional development assisting them (James, Lamb, Householder & Bailey, 2000). Rapidly changing technology makes it hard on students and educators alike. The problem is, educators are not receiving the right training to implement technology tools into the classroom in a meaningful way, and students are spending

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an excessive amount of time in front of screens that is unhealthy for their learning as well as their mental and physical wellbeing.

The purpose of this literature review is to determine the fine line between the good and evil with technology use in the classroom. There have been many articles and studies proving the benefits of implementing technology tools into the classroom, but there are not many studies demonstrating the negative impacts these technologies may have on our students. Throughout this literature review, educators will be able to determine how to meaningfully implement technology tools into their classrooms without becoming overwhelmed by the vast number of programs being developed on a daily basis. Awareness will be given to the dangers of screen time and how it plays a major role in student health and learning in and out of the classroom.

By using the DeWitt online library, over 30 peer reviewed scholarly articles were analyzed. Each article was written within the past ten years. These articles were able to provide insight as to how technology tools can have a negative impact on student and educator, learning and health. As technology is rapidly changing, it is important to note that the majority of the studies referenced were conducted within the past 5 years. Some articles that were found within the 10-year time frame had technological findings that were too outdated, making them unusable for this literature review.

The technology expectations and amount of screen time that students are required by their teachers on a daily basis is negatively impacting student mental health, physical health, and the learning process as a whole. This information is essential for teachers to review and understand the consequences of their technology implementation within the classroom.

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Boundaries should be set in place before educators overwhelm themselves, or their students with too many technology programs, or an excessive amount of screen time. Through research, it has been determined that the overuse of technology devices is now a worldwide phenomenon that has been linked to negative health impacts, particularly among children and adolescents (Buabbas, A., Al-Mass, Al-Tawari & Buabbas, M., 2020). Technology use needs to be limited within the classroom in order to enhance intrapersonal relationships, social skills, and to avoid the negative health impacts that it is having on our students.

Throughout this literature review, one will learn how technology plays an important role within the education system in the twenty-first century. Although beneficial in many ways, technology enhances the amount of pressure that educators are facing to implement multiple new programs and tools into their lesson plans. The rapid changes are affecting educator's personal and professional well beings, which brings up the impacts of technology and student learning. With the extreme increase in screen time that young students are experiencing, it is causing many negative implications on mental health, and physical health and learning ability. At an attempt to engage students with the curriculum, many teachers are actually hindering student learning. Technology is not the only way to engage student learning and the negative effects students are experiencing could be easily avoided.

Literature Review

Technology Implementation

Technology has been making massive strides in software development, computer programs, and online educational tools for students and educators to utilize in the classroom. There have been multiple studies claiming that the 1:1 classroom environment supported positive

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outcomes for both students and teachers and that it makes students were much more independent and responsible (Higgins & BuShell, 2018). Although this may be true in some circumstances, Higgins' & BuShell's (2018) survey of 207 high school students, failed to mention the negative effects of technology implementation into the classroom. Schwarz & Zhu (2015) found that solely incorporating technology into the classroom does not increase student engagement. Instructors must develop high expectations of their students' work in a class. Once students begin meetings those expectations, their level of satisfaction, motivation, courage and engagement in the course will be positively influenced. Teachers cannot focus on the technology alone when attempting to improve their lessons to enhance student engagement. The reality is, teachers are having a hard time keeping up with all of the drastic changes with educational technology tools. The majority of schools in the United States are already, or working on becoming, 1:1 with a technology device. A study run by Vu, Fredrickson & Gaskill (2019) surveyed 15 different schools that were in the process of implementing the 1:1 initiative, and the results were surprising. Only two of the 15 schools provided training or professional development for their teachers before launching their 1:1 initiative. The two schools that offered informational training for teachers was completely voluntary. It is highly unlikely that every educator within the schools surveyed knew how to confidently and correctly use the technology being implemented into their schools. The lack of education for the educators makes it quite challenging to effectively integrate the new devices into their lessons and ensure student engagement and understanding.

Kelli (2019) analyzed the perceptions, and contradictions, that exist between students, teachers, and administrators of computer-based intervention tools that are being used for

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struggling readers at the middle school level. Although there are many new helpful programs available to assist struggling students, Kelli (2019) found that educators may not be using these intervention tools correctly therefore causing them to be ineffective. Without the proper training, teachers often use these types of tools as a “break” from teaching, while the student continues to work independently on the reading intervention program. Unfortunately, schools continue to rely on interventions that fail to address the needs of adolescent struggling readers (Kelli, 2019). In order to make these tools effective, educators need training on how and when to appropriately incorporate these tools into their lessons in order to increase student learning.

Student engagement is a major factor that educators consider when developing their lessons. Studies on student engagement have been conducted over the past 70 years, beginning with Ralph Tyler. Ralph Tyler is a well-known educator that influenced the policies written within the Elementary and Secondary Education Act of 1965. Since then, studies on engagement have continued to evolve. Hampel and Pleines (2013) surveyed a cohort of 156 university students, and found that implementing technology had a positive impact on learner engagement and participation. In 2017, a literature review analyzing articles that discuss computer-based technology and the different impacts it has on student learning found that they provided preliminary support that computer-based technology influences student engagement. (Schindler, Burkholder, Morad, & Marsh, 2017). In a world of technology, teachers need to mindfully consider which programs they are using in order to enhance student engagement. For true, in-depth learning to take place, cognitive engagement needs to be present (Parsons, Nuland, & Parsons, 2014). Therefore, it is extremely important for teachers to be well versed with the technology so that they are able to identify which tools will make the most significant impact on

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student learning. With thousands of applications, tools, programs, and devices to choose from, teachers are feeling the pressure to learn and utilize as many as they can in order to keep their students engaged. According to an observational study conducted by Parker, Stylinski, Bonney, DeLisi, Wong, & Doty, (2019) that was developed to capture the quality of technology use to support science inquiry in high school science classrooms, the presence of technology is not the same as quality integration of that technology (Parker, Stylinski, Bonney, DeLisi, Wong & Doty, 2019). Teachers must know how to appropriately use technology before they are able to produce high quality education for their students. A study conducted by Morris & Loran (2014) found that posting on discussion boards and participating in conversation with classmates through an online learning management system had a negative impact on student engagement. Through student survey results, this study was able to prove that the use of technology itself does not automatically improve student engagement and learning outcomes.

Unfortunately, teachers often tend to get overwhelmed by the immense number of technologies that they need to learn and end up using programs that they are unfamiliar with as a “time filler”. Without the proper training or the time to properly train themselves, teachers are unable to utilize the technology tools in a way that enhances student learning. After surveying over 150 undergraduate students and 10 professors, Hampel & Pleines (2013) were able to conclude that there are many challenges of online learning in terms of the skills that both teachers and learners need to develop in order to deal with the pedagogical, cognitive and socio-affective implications of electronic communication. Educators first need to be taught how to use and implement new tools before they are able to teach their students. Since many educators are not given enough professional development opportunities to keep up with the quickly changing world of technology, they are unfamiliar with or intimidated by technology. These negative

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feelings toward new programs and devices create overwhelm, stress and anxiety. According to a study conducted by Fernández-Batanero, Román-Graván, Reyes-Rebollo, & Montenegro-Rueda (2021), the use of new technologies can be negative for teachers because it implies changes in their teaching methods or pressure to acquire technological skills, leaving sequelae such as physical, social, and psychological problems. The lack of support and training provided by school districts and the pressure to implement new technologies is counterintuitive. In order for educators to alleviate this stress and anxiety, the school districts need to determine which technologies are necessary for student learning and provide them with the professional development courses needed to master it. High quality education cannot take place without high quality teaching. If teachers are selective about what types of technology tools they are implementing into their lessons, and mindful of student engagement strategies before implementing the technology, they will be able to select the correct tools that will help their students learn to the best of their abilities and keep them engaged with the material.

Screen Time

With the 1:1 initiative comes an increased amount of screen time. Now that the majority of students have their own technology device, they now have the ability to use the device whenever they want and for as long as they want. This new sense of freedom is frequently abused. According to the Canadian Sedentary Behavior Guidelines, children are recommended to spend less than 2 hours per day watching a screened device (Faught, Ekwaru, Gleddie, Storey, Asbridge & Veugelers, 2017). Unfortunately, students usually spend over 2 hours per day staring at a device, and that is just to complete their school work (Scarpellini, et al., 2021).

An international survey conducted by Kardefelt-Winther, Rees, & Livingstone (2020), examined the connection between screen time and students' quality of life. Unfortunately, their

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results were indecisive. They were unable to find any strong correlation between time spent on the Internet and children's life satisfaction. However, they did see a correlation between student mental health for multiple students and provided many suggestions on how students can improve their quality of life by limiting the amount of screen time and increasing the amount of family and peer interaction and communication.

Whether students are using a computer, tablet, or cell phone, all screened devices emit blue light radiation. With the increased use of devices on a daily basis, students are being exposed to extra amounts of blue light radiation. Blue light waves have the shortest wavelength in the visible light spectrum. Shorter wavelengths have a higher frequency, therefore, more power, making blue light the most harmful of the visible light waves. Harvard University's Health Department (2012) conducted an experiment comparing the effects of 6.5 hours of exposure to blue light to exposure to green light of comparable brightness. The blue light suppressed melatonin for about twice as long as the green light and shifted circadian rhythms by twice as much (3 hours vs. 1 1/2 hours). (Harvard University Health Department, 2012).

Melatonin and circadian rhythms are key factors for receiving quality sleep. If students are disrupting their sleep at a young age, they can be putting themselves at risk for severe health conditions in the future. Study after study has linked exposure to blue light at night to several types of cancer (breast, prostate), diabetes, heart disease, obesity and depression. (Harvard University Health Department, 2012). With schools transitioning to 1:1 within the classroom, they are increasing the amount of blue light exposure and indirectly harming student health.

The COVID-19 pandemic completely changed what the education system looked like for children. Students all around the world remained confined at home and forced to attend "virtual schooling" via a screened device. This affected 1.56 billion children and young people: about

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89.6% of the global student population (Scarpellini, et al., 2021). A study conducted in the Spring of 2021, by Scarpellini, et al. (2021), surveyed over 1500 mothers, and their children in elementary and middle school. The survey was created to determine what types of impact virtual schooling had on student learning. Results revealed that students middle school students, were spending several hours each day in front of a screen watching educational videos, playing interactive modules, and typing their assignments. In 2% of the students surveyed, there was an abuse of media use, with 8 -12 hours of screen time. Because of the COVID-19 pandemic, students were, and continue to be, spending more than the recommended time in front of a screened device. These habits can result in severe mental health, physical health and learning struggles in developing children.

Student Mental Health

The amount of screen time students are experiencing per day has a direct correlation to their emotions, behaviors and mental health. During the COVID-19 pandemic, students were required to spend majority of their day in front of screens which negatively impacted social interactions and time that may have been dedicated to sports or other extracurricular activities. Of the 1500 mothers surveyed, a majority (60.2%) observed behavioral changes in their children. The most frequently observed symptoms were restlessness (69.1%) and aggressiveness (33.3%), and anxiety (34.2%) (Scarpellini, et al., 2021). It is clear that children are in need of social interaction in order to maintain a sense of normalcy. When these children were abruptly removed from their friends, sports teams, and activities, they had to rewire their brains to accept a new lifestyle. Many children did not know how to respond to these drastic changes. Since children are still developing, the best way they know how to cope is through their negative emotions and behaviors.

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A study conducted by Mahmoodi, et. Al (2018) in Iran was used to investigate the association between screened device overuse and mental health, among high school students. Researchers Mahmoodi, et. Al (2018) used a three-section questionnaire for over 1,000 students to determine the correlation between technology addiction, general health, and their sociodemographic information. The results showed that overuse of technology was in fact, associated with poor mental health. Overuse may cause withdrawal, resulting in feelings of anger, tension, and/or depression when the technology is inaccessible. Overuse may cause tolerance, resulting in the need for more technology, more software, or more hours of use. Using technology excessively can increase likeliness of lying, arguments, poor achievement, social isolation, and fatigue. Excessive use may also be related to impulse control deficit or depression, chronic stress, low self-esteem, and anxiety (Mahmoodi, Nadrian, Shaghghi, Jafarabadi, Ahmadi, & Saqqezi, 2018). A literature review that was conducted by Saunders & Vallance in 2017, was also able to find a connection between screen time and adverse mental health effects in children under 18 years of age. Screen time is negatively associated with self-esteem, social behavior, academic achievement and psychological well-being, and positively associated with depression. (Saunders & Vallance, 2017). As children are introduced to technology devices at such an early age, they do not yet have the self-control needed to regulate their technology use. They have a hard time determining a healthy amount of screen time and when to stop. Children then begin to develop bad habits. It is vital that parents are setting time limits and restrictions for technology use so that their children do not experience any of these negative mental, emotional or behavioral changes.

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Students now have access to the entire world. Whatever they want to know, and even things that they do not want to know, are all found on the internet. It is extremely challenging for parents to monitor everything that their children are viewing, doing, and researching on the computer. According to these studies, it is clear that the more time spent on a screened device, the more likely it is that they are absorbing unhealthy material. In Korea, Yoo, Cho, & Cha, (2014) examined the factors influencing internet addiction levels and mental health. 74,980 Korean middle and high school students completed the 2010 Korea Youth Risk Behavior Web-Based Survey. Through their responses, Yoo, Cho, & Cha were able to find that long periods of time spent on the internet increase suicidal ideation, depression, subjective stress, a low sense of happiness, and problematic substance abuse (2014). The use of technology and the internet is often used as an outlet for students to “escape reality”. An attempt to feel better through technology use often ends up distracting or numbing, instead of fixing the issues they are dealing with. Unfortunately, the immense amount of access to the world through the internet leaves students feeling lonely and less than others.

Student Physical Health

Not only are students mental health a concern, but the amount of screen time students are exposed to is also taking a toll on their physical health. Over 400 undergraduate students participated in a study conducted by Mowatt, Gordon, Santosh, & Jones (2018), to determine the prevalence of computer vision syndrome (CVS) and ergonomic practices. CVS is at risk of becoming a major public health issue. The American Optometric Association defines CVS as a complex eye and vision problem related to computer use. CVS currently affects 60 million people globally (Mowatt, Gordon, Santosh, & Jones, 2018). Through this study, students

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documented any symptoms that they experienced after using a computer or electronic device over a 2 hour or more time frame. Neck pain, eye strain, shoulder pain, and eye burn were the most common CVS symptoms experienced in the study. Dry eyes, double vision, and blurred vision were the least commonly experienced symptoms. Most students (40.3%) used the computer for more than 6 hours per day, 33.3% used a device between 4 and 6 hours a day, and only 5.6% were in front of a screen for less than 2 hours per day (Mowatt, Gordon, Santosh, & Jones, 2018). The number of hours that the majority of college students spend on a device is shocking. Almost half of the students surveyed spent more than 6 hours viewing a screened device. The average human is awake approximately 16 hours a day. This means that over 1/3 of their day they are stagnant, staring at a screen. It makes sense that students are experiencing multiple CVS symptoms after the excessive amount of computer use. College students can range from age 17 to 22. Humans are not fully developed until the approximate age of 25. The impacts that screened devices can still play a negative role in their brain development.

Over 3,000 elementary, middle and high school students were given a questionnaire to find a connection among technology overuse and overall health. This cross-sectional survey conducted by Buabbas, Al-Mass, & Buabbas (2020), was able to show that various health problems can arise due to technology device overuse. The survey found that many students experienced eye problems that include transient vision loss, eye flashes, eye squinting and blurry vision. Students also experience a lack of concentration, reduced physical activity and headaches. Headaches were the most commonly reported symptom associated with device overuse. (Buabbas, Al-Mass, & Buabbas, 2020).

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Lack of sleep is one of the leading causes to a majority of health problems. Studies have shown that there is a direct correlation between technology use and the amount of uninterrupted sleep one receives. Melton, Bigham, Bland, Bird, & Fairman (2014) gave a 28-item questionnaire to over 500 undergraduate students to examine associations between technology usage and specific health factors. The participants that reported receiving less than 6 hours of sleep also reported significantly higher minutes per week of technology usage when compared to those who achieved an average of 9 or more hours of sleep. Results also showed obese participants reported an average of double the amount of technology usage than the groups collective average. (Melton, Bigham, Bland, Bird, & Fairman, 2014). Maintaining a healthy amount of sleep and a healthy body weight is important for overall health and well-being. Whether sleep patterns are disturbed by text messages, late night studying, or an excess amount of blue light radiation, students are indirectly harming their developing bodies. The more time spend idle viewing screened devices means that there is less time spent being active. As students continue to grow, a high BMI is definitely a cause for concern. Saunders and Vallance's literature review (2017) over 119 cross-sectional and 33 longitudinal studies examined the relationship between screen time and adiposity in youth. They found that children who viewed screens for more than 2 hours per day were more likely to be overweight or obese. Educators and parents need to be aware of these negative health effects so that they can help students monitor an appropriate amount of screen time usage.

Student Learning

Enhancing student learning is the number one reason for implementing technology into our classrooms. Our society's dependance on technology is increasing rapidly, making it

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necessary for schools to integrate technology skills within the curriculum. Students need to know how to properly use, interact with, and utilize technology appropriately so that they are able to function in today's ever-changing world. A survey conducted at Kermanshah University (2019) was used to determine the general health status of students according to their sleep quality, cell phone usage, and social media or internet addictions. Data collection tools that were used for this study were, Goldberg's General Health Questionnaire, Pittsburgh Sleep Quality Index, Young Internet Addiction Test, Social Network Addiction Questionnaire, and Cell Phone Overuse Scale. The students that received the worst general health scores were students who had cell phone overuse and addiction to the Internet and social networks (Kawyannejad, et al., 2019). General health affects multiple aspects of students' lives, such as their academic achievement. This direct correlation between health and the ability to learn shows that technology use can be the "starting point" that allows students to spiral down a path of negative health choices, which will then affect their academic performance. When a student is low on sleep due to a technology addiction, it is much harder for them to comprehend what is being taught. The ability to learn requires focus from the entire body and brain. If a student is experiencing any distractions (tiredness, hunger, CVS, emotional stress, anxiety, depression, etc.), it is quite challenging for them to engage and understand the material being taught. Students need to know how to make healthy choices when it comes to technology in order to set themselves up for success in the classroom.

Corredor and Olarte (2019) surveyed 2659 students in Columbia to get feedback on how technology integration was assisting with engagement, motivation and learning in their schools. The results showed that digital educational resources have affordances that might help to

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transform education, yet technology-based school reform has not yet brought long-lasting educational change. These results are worthwhile to explore. If many studies claim that technology implantation improves student learning, how has it failed to achieve the pedagogical potential of its affordances? One would think that we would start seeing more drastic educational advancements now that the majority of students are 1:1 with a technology device. This survey helped show that the technology itself cannot increase student learning.

Faught, et. al (2017) found over 4,000 Canadian 5th graders and their parents to participate in a survey that would help researchers understand the correlation between healthy lifestyles and student learning. The results of the study showed that students who manage healthy diets, sufficient physical activity and sleep, and minimal screen time qualify as a healthy lifestyle. Maintaining a healthy lifestyle is important to children's cognitive performance during development, and may potentially optimize academic success. Individual lifestyle behaviors have independent, positive associations with academic achievement, and the cumulative effects of multiple healthy lifestyle behaviors have a stronger positive association with academic outcomes in Reading and Writing than any individual association (Faught, Ekwaru, Gleddie, Storey, Asbridge, & Veugelers, 2017). As mentioned, it is extremely important for students to be well rested, happy and healthy prior to attending school. When their mental health and physical health are in control, students are able to optimize their learning experiences.

Technology has the ability to enhance student learning if it implemented correctly. Dart, Cunningham-Nelson & Dawes (2020), surveyed undergraduate students participating in "blended learning" classes. Blended learning is a combination of in-person and online learning where students are able to control the pace of their education. This study was completed to assist

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understanding of technological features that encourage (rather than hinder) learning and how educators can enable more intentional designs with technology. This method is likely to be embraced by learners, thus resulting in high learning rates. This study found that the transition of face-to-face courses to blended course offerings requires a significant investment in technology and human resourcing to generate the online component, and there is a risk of underutilization of these online resources. The learning benefits of technology implementation are possible if educators are appropriately trained and willing to put in the time and effort that is required to create quality learning experiences for their students.

Through a nationwide survey that was given to 5th graders attending online schooling during the COVID-19 pandemic, Scarpellini, et al. (2021) were able to conclude that despite the efforts provided by teachers, distance learning turned out to be useless and ineffective in replacing physical presence in school. The survey reported low levels of learning, insufficient cognitive stimulation, and absence of social interactions created a gap that will be hard to fill, especially for young children, who have lost almost one year of school (Scarpellini, et al., 2021). Although the 2020-21 school year was quite challenging, educators were able to learn a lot about technology implementation. Teachers were forced to transition to a fully digital classroom and attempted to continue student learning from home. It has been estimated that 12 weeks of school interruption drops test scores significantly (Scarpellini, et al., 2021). Unfortunately, educators and administrators were not as successful as they hoped to be. Online schooling proved that students thrive with in-person learning with their peers and teachers. This study was also able to improve just how important educators are necessary in the learning process. Technology is not able to take the place of a quality teacher.

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In order for distance learning to be most successful, educators and administrators should consider incorporating a “Learning Management System” (LMS). A study conducted by Stockless, (2018) in Montreal, Canada, surveyed over 100 educators that were implementing a new LMS into their schools. Teachers were able to give feedback on how the LMS helped enhance their lessons and student comprehension. A LMS is able to simplify the complicated and enormous World Wide Web, by providing students with a “one stop shop” for all of their online learning tools. Implementing too many different tools and programs can become extremely overwhelming for educators and students alike. The majority of educators in this study saw an improvement within their lesson plan development and student participation after introducing the new LMS into their classrooms. The goal of technology use is to increase student learning, and incorporating a LMS is just one of the many ways educators can begin to rid of the technological confusion and focus on the curriculum.

Findings

It has been proven that time spent using technology plays a significant role in student and teacher mental and physical health. Students are spending way too much time viewing screened devices and as educators continue to implement new technologies into the classroom, they will continue to increase the amount of screen time they experience each day. Throughout the past 10 years of technology implementation studies and articles, the average amount of screen time that students are exposed on a regular basis continues to compound. With the development of new technologies comes availability, and now the majority of school aged children have their own technology device that they are able to use as frequent as they would like.

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Educators today are being pressured more than ever to keep up with the ever-changing technology programs, tools and devices. This pressure to make technologically advanced lessons, frequently learn how to utilize new programs, and implement devices into their classrooms is creating extreme amounts of stress and anxiety for educators. In order to implement new technologies into their lessons, the teacher needs constant support and be sure that they will be able to get training at any time for a particular device or tool. In fact, there are no clear regulatory standards for the level competence teachers must have with technologies before implementation. (Y, V. S, 2020). Having access to support needed is necessary to help alleviate the pressure and allow teachers to focus on what they do best – teaching!

It is still unclear how to determine the exact amount of technology time each day that would be considered “healthy” for students. But it is clear that those who spend an excess amount of time using screened devices each day tend to have poorer overall health. Faught, et. al (2017) also noted that academic success has a direct correlation to overall health and wellbeing. Technology overuse is a “gateway habit” that opens up opportunities for negative health choices by adolescents.

Throughout the past 10 years of scholarly articles and research studies, it was clear that technology has been developing at an exponential rate. The education system saw the rapid development as an opportunity to increase student learning and gain engagement. The education system was correct, implementing technology into the classroom has been a tremendous help in providing students with opportunities that may not otherwise be possible. Since desktop computers first began entering the classroom, there have been many articles and studies that continue to talk about how wonderful technology implementation is for students and encouraging

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the use of screened devices. As technology continues to transform and develop at a rapid pace, studies are now beginning to discover the negative effects that it can have on its users.

Conclusion

The evidence to date suggests a clear need for policy aimed at minimizing the hazardous health consequences associated with screen time among children and youth. Screen-based technology is rapidly changing and it is imperative that researchers recognize and keep pace with the shifts in trends and use of screen-based entertainment devices. (Saunders & Vallance, 2017).

Multiple recommendations have been given based on the findings of the studies analyzed. School aged children should reduce their screened device time per day and periodically take breaks every thirty minutes. They should also avoid using devices before bed in order to maintain a healthy sleep pattern. Parents need to be aware of the amount of time their students are spending on their devices and set clear boundaries. Creating time to spend as a family doing physical activities is a great way to reduce screen time and increase physical health outcomes. Regular eye exams are highly encouraged to avoid the effects of CVS.

There are also multiple recommendations found that may help educators with implementing technology into their classrooms. After analyzing multiple articles, Morris and Loran (2014) suggest that teachers determine specific tools that will assist their current lessons and enhance their teaching pedagogy. Incorporating a tool for collaboration allows educators and students to share documents and files during and after school hours. A tool for coordination is a great way for educators to inform their students with updates and keep the class structure organized. Finally, a tool for communication enhances synchronous as well as asynchronous

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discussion and sharing opportunities. By using specific tools and applications for learning activities based on well-formulated pedagogies, educators can develop a more dynamic formal learning environment to guide and support informal and open community-based learning activities while alleviating the stress and frustration of implementing new programs every time they are released (Lai, Khaddage, & Knezek, 2013).

These recommendations provide students and educators with some guidance as to how they can mentally and physically feel better about implementing technology into their classrooms and personal lives. Technology is not going away; in fact, it is only becoming more and more prevalent in our society. Being knowledgeable of the negative effects that technology can play on mental health, physical health and student learning, is the first step towards developing healthy and intentional technology use habits.

Direction and Limitations

The study of technologies effect on health and learning, would benefit from having a more precise screened device time use. Majority of the studies researched had students and teachers rating themselves for “technology addictions” and the amount of screen time used per day. By collecting data from students and educators through this method, it is hard to say if their answers are honest, accurate, and reliable. There were many results provided that needed to be discarded from studies entirely because the data that was recorded by the participants was extremely skewed and not humanly possible. In order to get more specific and valid results, researchers could implement a “screen time tracking” program on student devices. This would be able to record the exact times that the devices are in use; providing extremely reliable data for the studies allowing recommendations and suggestions for healthy technology use clearer.

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Most studies that were analyzed were able to provide some suggestions for what they think a healthy amount of screen time would be for growing children. However, these studies seemed to have differing opinions as to what that daily screen time frame should be. Some studies recommend less than 2 hours per day, which seems relatively impossible with educators implementing technology into their lessons. A middle school student attends anywhere from six to nine classes per day. If every teacher throughout the child's day is using technology in their classrooms for 20 minutes or more, that student would already be overusing technology solely within the school walls. Any homework or entertainment would be exceeding the recommended amount. There were some studies that recommend that students use less than 4 hours of technology per day. This number seems more realistic for students, but double the amount of time would be twice as harmful to the body and mind. The inconsistencies between studies makes it hard to determine which recommendations would be most helpful for students and educators to follow.

Surprisingly, there have not been many research studies that focus on the negative impacts of technology implementation into the classroom. The majority of the articles found on this topic discussed the positive influence technology can have on educators' lessons, student engagement and learning. The lack of studies on the negative aspects is slightly concerning. With the rapid growth of technology into every aspect in society, it is crucial that the people using it are aware of the long-term effects it can have on physical and mental health. Learning the pros and cons will allow people to make educated decision on how they would like to implement and monitor the use of technology in their everyday lives.

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